PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

FEDERAL AID PROJECT F-221-M-1

INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

2010 Survey Report

Lake Texana

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SURVEY AND MANAGEMENT SUMMARY

Fish populations in Lake Texana were surveyed in 2002, 2006, and 2010 using trap nets and electrofishing and in 2003, 2007, and 2011 using gill nets. An additional largemouth bass-only, electrofishing survey was conducted in spring 2008. This report summarizes the results and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Lake Texana is a 9,727-acre reservoir, controlled by the Lavaca-Navidad River Authority (LNRA), located on the Navidad River in the Lavaca River Basin, approximately 20 miles east of Victoria. It receives water from the Navidad River, Sandy Creek, and Mustang Creek and is used for water supply and recreation. Water level typically fluctuates 2-4 ft annually but has fluctuated as much as six feet.

- **Management History:** Important sport fish species include blue and channel catfish, white bass, largemouth bass, and white and black crappie. Management strategies from the 2007 Performance Report focused on assisting LNRA with vegetation control, additional springtime electrofishing surveys for largemouth bass, and changing sampling effort. Herbicide treatments are conducted annually by LNRA staff and hired contractors. The Texas Parks and Wildlife Department (TPWD) assisted as consultants for vegetation control and as a funding source. Spring electrofishing surveys were conducted in 2008. Minimal sampling effort was reduced to match the TPWD sampling procedures manual.

- **Fish Community:**
  - **Prey species:** Gizzard and threadfin shad were abundant in the reservoir but were no longer the predominant forage group. Abundance of all sunfish species have increased substantially and sunfish are now the predominant forage group. The increased abundance in sunfish is likely explained by the increase in habitat, primarily submersed aquatic vegetation. Overall, forage species were small enough to be consumed by most predatory species.

  - **Catfishes:** Blue, channel, and flathead catfish were present in the reservoir with blue catfish being the predominant species. Blue catfish provided a good angling opportunity as evidenced by balanced size structure as well as good numbers of legal-sized fish.

  - **White bass:** Gill net catch rates of white bass increased substantially in 2011. The population appeared healthy and the majority of fish collected in gill nets were legal-sized. Growth was rapid as most white bass reached 10-inches by age 1.

    Largemouth bass: The largemouth bass electrofishing catch rate was the highest in over 10 years. The sample was predominantly small (sublegal-sized) fish indicating increased spawning success and survival from previous years. A few legal-sized fish were collected as well. The average age of 14-inch largemouth bass was 1.4 years.

  - **Crappie:** Overall trap net catch rates of black and white crappie increased but catch rates of legal-size fish was similar to previous surveys. The majority of both populations were comprised of sublegal-sized fish, indicating good spawning success and survival. White crappie reached 10-inches by age 2.

- **Management Strategies:** Continue to work with the LNRA on exotic aquatic vegetation control, write and distribute press releases concerning the fisheries, and continue to manage fisheries under current regulations.

INTRODUCTION

This document is a summary of fisheries data collected from Lake Texana in 2010-2011. The purpose of the document is to provide fisheries information and provide management recommendations to protect and improve the sport fishery. This report deals primarily with major sport fishes and important prey species. Management recommendations address existing problems or opportunities. Historical data is presented with the 2010-2011 data for comparison.

Reservoir Description

Lake Texana is a 9,727-acre reservoir (previously listed at 10,628 acres), controlled by the Lavaca-Navidad River Authority (LNRA), and located on the Navidad River in the Lavaca River Basin, approximately 20 miles east of Victoria. It receives water from the Navidad River, Sandy Creek, and Mustang Creek and is used for water supply and recreation. Water level typically fluctuates 2-4 ft annually but has fluctuated as much as six feet. Water level at the time of sampling was near conservation pool in fall 2010 but 5-6 feet below pool in spring 2011. Shoreline, boat, and handicap access were adequate. Substrate was composed primarily of clays, deep loams, and saline soils. Littoral habitat consisted of several native aquatic vegetation species (American pondweed, coontail, American lotus, cattail, and bulrush) and standing timber. Exotic aquatic vegetation species present included hydrilla, water hyacinth, giant salvinia, alligator weed, and trace amount of parrot feather. The LNRA implemented annual herbicide treatments for water hyacinth and giant salvinia. The Texas Parks and Wildlife Department (TPWD) assisted with the control of giant salvinia through use of the giant salvinia weevil *Cyrtobagus salviniae.* The lake is windswept and generally turbid throughout the year, however, clear water can be found in coves with dense stands of submersed vegetation.

Management History

Previous management strategies and actions: Management strategies and actions from the previous survey report (Findeisen and Neahr 2007) included:

1. Continue to assist LNRA with the control of water hyacinth and giant salvinia on the reservoir.
   Action: District staff annually reviewed and provided comment on vegetation treatment proposals submitted for the chemical treatment of water hyacinth and giant salvinia. District staff chemically and biologically treated giant salvinia in several small impoundments adjacent to Sandy Creek, a major drainage into Lake Texana.

2. Monitor largemouth bass stockings conducted in 2006 and 2007 with additional electrofishing surveys in spring 2008, fall 2008, and spring 2010.
   Action: District staff conducted an additional electrofishing survey in spring 2008 and collected 17 largemouth bass. The additional electrofishing surveys scheduled for fall 2008 and spring 2010 were cancelled due to substantial water level changes.

3. Reduce minimum sampling effort for gill net, trap net, and electrofishing surveys so that minimum efforts were inline with current TPWD sampling protocol according to surface acreage.
   Action: Minimum sampling effort was changed from 15 net nights to 10 net nights for gill nets and trap nets and from 24 5-minute electrofishing stations to 18 5-minute electrofishing stations.

Harvest regulation history: Sport fish in Lake Texana are currently managed with statewide regulations (Table 2).

Stocking history: Florida largemouth bass were stocked in 2006 and 2007. A complete stocking history is in Table 3.

Vegetation/habitat history: Lake Texana supports native emergent, native floating, and native submerged vegetation, several exotic species, and has large stands of standing timber (Table 4). Water hyacinth and giant salvinia are problematic species and can be found throughout the entire reservoir. Both water hyacinth and giant salvinia are treated annually with herbicides by LNRA. Approximately 1,000,000 giant salvinia weevils were released by TPWD between 2002 and 2005. Hydrilla and several native aquatic vegetation species have begun to expand in the reservoir as a result of vegetation control efforts on water hyacinth and giant salvinia. Historically, hydrilla has always been present in the reservoir but was only problematic shortly after the reservoir filled. At that time grass carp were released in the reservoir for hydrilla control. Approximately 700,000 hydrilla flies were released by TPWD in 2005 to control hydrilla around the Navidad River boat ramp.

Water Transfer: Lake Texana is primarily used for water supply and recreation. Currently, there are two permanent pumping stations on the reservoir that transfer water to other locations. Both stations are operated by the LNRA. One pumping station provides water to the local municipal and industrial water users and the other pumping station provides water to the city of Corpus Christi via the Mary Rhodes Pipeline.

METHODS

Fishes were collected using electrofishing (1.5 hours at 18 5-minute stations), trap nets (10 net nights at 10 stations) and gill nets (10 net nights at 10 stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour of actual electrofishing (fish/h) and for trap and gill nets as the number of fish caught in one net set overnight (fish/nn). Access and aquatic vegetation surveys were conducted in summer 2010 while the shoreline habitat survey was conducted in 2006. All stations were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2009).

Genetic analysis of largemouth bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2009).

Sampling statistics (CPUE for various length categories) and structural indices [Proportional Size Distribution (PSD) for various length categories, as defined by Guy et el. (2007)], and condition indices [relative weight indices (W_r)] were calculated for target fishes according to Anderson and Neumann (1996). Index of vulnerability (IOV) was calculated for gizzard shad according to DiCenzo et al. (1996). Relative standard error (RSE = 100 X SE of the estimate/estimate) was calculated for all catch statistics and SE was calculated for structural indices and IOV. Source for water level data was the United States Geological Survey website. Largemouth bass, white crappie and white bass were aged using otoliths.

RESULTS AND DISCUSSION

Habitat: Shoreline habitat consisted of natural shoreline, concrete, cut bank, and gravel. Littoral zone and near shore habitat consisted of flooded terrestrial vegetation, hydrilla, giant salvinia, water hyacinth, alligator weed, American lotus, coontail, American pondweed, water stargrass, and standing timber. Results of the complete littoral zone habitat/vegetation survey are in Table 4.

Prey species: The 2010 electrofishing CPUE for gizzard shad was 104.7/h, between the 2002 (87.0/h) and 2006 145.0/h catch rates (Figure 2). The IOV for gizzard shad was 91, indicating that 91% of the gizzard shad were less than 8 inches in length and vulnerable to predation. The 2010 electrofishing CPUE for threadfin shad was 44.7/h, lower than previous years (Figure 3).

The 2010 electrofishing CPUE for bluegill was 142.0/h, substantially higher than in 2002 (30.5/h) and 2006 (12.5/h) (Figure 4). Relative abundance of all sunfish species was higher than historical values and likely explained by the increase in vegetative habitat. All sunfishes were of size available to most predators. Bluegill and other sunfish do not provide a fishery as few fish $\geq$ 6 inches were present in the reservoir.

Blue catfish: The 2011 gill net CPUE for blue catfish was 14.3/nn, substantially higher than in 2003 (7.7/nn) and similar to 2007 (18.0/nn) (Figure 5). Mean relative weights of blue catfish stock size and longer were good; averaging in the 90s. Over half of the blue catfish collected in the 2011 survey were longer than the 12-inch minimum length limit, with a few fish exceeding quality size (20 inches total length). Blue catfish are the predominant catfish species in this reservoir.

Channel catfish: The 2011 gill net CPUE for channel catfish was 1.0/nn, similar to the 2003 (0.2/nn) and 2007 (0.3/nn) (Figure 6). The CPUE of legal-sized fish were the same for all three survey years (0.2/nn).

White bass: The 2011 gill net CPUE for white bass was 7.5/nn, substantially higher than in 2003 (0.5/nn) and in 2007 (0.1/nn) (Figure 7). Increased CPUEs are probably due to sampling at lower water levels during the spawn. Mean relative weights of white bass appear excellent, averaging greater than 100, but are likely inflated as a result of sampling during the spring spawn. Growth was excellent as most white bass reached legal-size (10-inches) by age-1 (Figure 8). The majority of white bass collected in gill net surveys were greater than the 10-inch minimum length limit as evidenced by a CPUE-10 of 6.7/nn.

Largemouth bass: The 2010 electrofishing CPUE for largemouth bass was 40.0/h, higher than both 2002 (6.5/h) and 2006 (2.0/h) (Figure 9). Mean relative weights for largemouth bass were good; averaging near or above 90 for all length classes. 2010 CPUE-14 (3.3/h) increased slightly from previous surveys in 2002 (0.5/h) and 2006 (0.0/h). Increased littoral zone habitat in the form of floating and submersed vegetation may have translated to increased survival and the higher largemouth bass relative abundance in 2010. The PSD value in 2010 (PSD = 56) were indicative of a balanced population. Bass reached 14-inches total length in 1.4 years. Genetic analysis indicated a 57% frequency of Florida largemouth bass alleles, with 3% of the population having the Florida largemouth bass genotype .

White crappie: The 2010 trap net CPUE for white crappie was 35.4/nn, higher than both 2002 (11.1/nn) and 2006 (7.4/nn) (Figure 10). Size structure indices and CPUE-10 were similar to previous years. Mean relative weights of white crappie stock size and greater were good and averaged in the mid 90s. White crappie reached 10-inches by age 2 (Figure 11).

Black crappie: The 2010 trap net CPUE of black crappie was 3.4/nn, higher than catch rates in 2002 (0.8/nn) and 2006 (0.4/nn) (Figure 12). No legal-sized (10-inches) black crappie were collected in 2010.

Fisheries management plan for Lake Texana, Texas

Prepared - July 2011.

ISSUE 1 Water hyacinth and giant salvinia continue to create access problems on Lake Texana and prohibit the colonization and growth of submersed aquatic vegetation utilized by centrarchid species. LNRA has conducted herbicide treatments on the reservoir resulting in the colonization and growth of submersed aquatic vegetation in a few areas.

MANAGEMENT STRATEGIES

1. Continue to provide support for LNRA on control of water hyacinth and giant salvinia.

2. When available, obtain and release new biological control agents from USDA for water hyacinth and giant salvinia control.

3. Educate the public about water hyacinth and giant salvinia through media outlets and via the internet.

4. Make a speaking point about water hyacinth and giant salvinia when presenting to constituents and user groups.

ISSUE 2 Much of the upper half of the reservoir as well as most of the coves are heavily timbered, creating hazardous boating conditions. Currently, there are no navigational aides marking the river channel in the upper half of the reservoir and creek channels in the timbered coves.

MANAGEMENT STRATEGY

1. Work with LNRA on the placement of navigational aides, marking the river channel on the upper end of the reservoir and the creek channels in the timber coves.

ISSUE 3 Populations of most regulated fishes in Lake Texana have increased since the last Report; however, very few anglers were encountered on routine TPWD fisheries and habitat surveys.

MANAGEMENT STRATEGY

1. Write and distribute press releases concerning the improved fisheries

SAMPLING SCHEDULE JUSTIFICATION:

The proposed sampling schedule includes standard electrofishing, trap netting, and gill netting once every four years (Table 5), sufficient for monitoring all target species.

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Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 *in* B. R. Murphy and D. W. Willis, editors. Fisheries techniques, second edition. American Fisheries Society, Bethesda, Maryland.

DiCenzo, V.J., M.J. Maceina, and M.R.Stimpert. 1996. Relationships between reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16:888-895.

Findeisen, J. A. and T. Neahr. 2007. Statewide freshwater fisheries monitoring and management program survey report for Lake Texana, 2002. Texas Parks and Wildlife Department, Federal Aid Report F-30-R, Austin.

Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional size distribution (PSD): A further refinement of population size structure index terminology. Fisheries 32(7):348.

Quarterly Surface Water Level

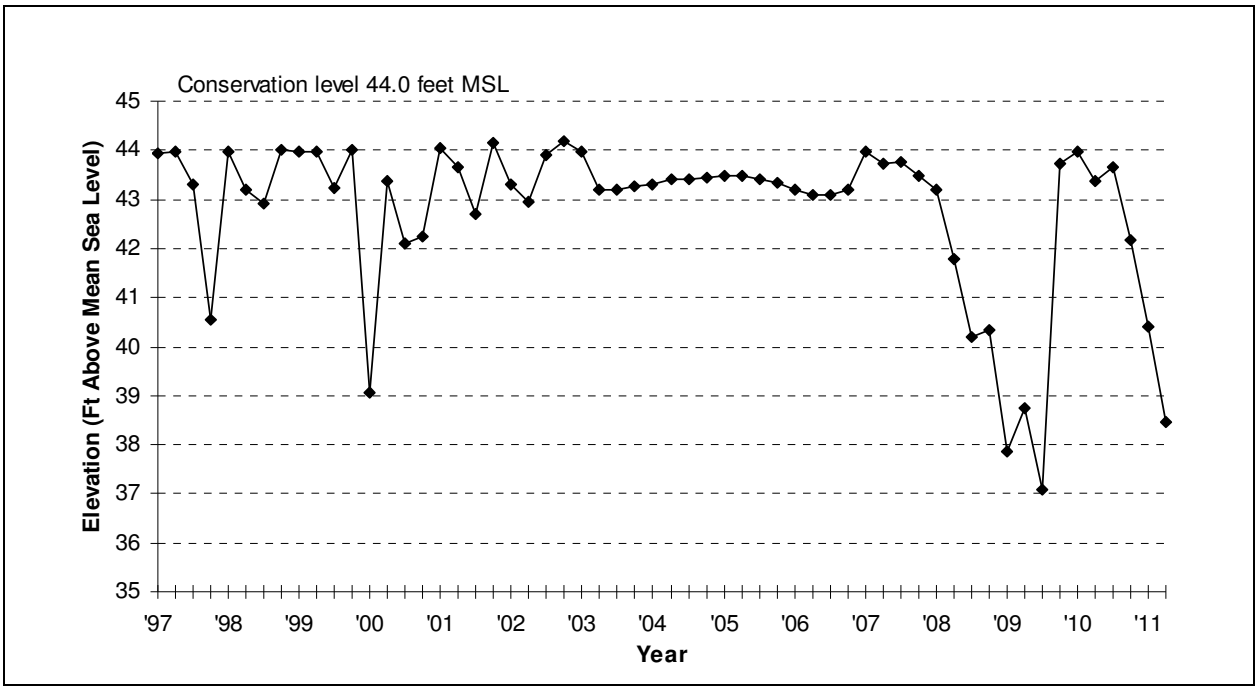


Figure 1. Quarterly water level elevations in feet above mean sea level (MSL) recorded for Lake Texana Reservoir, Texas.

Table 1. Characteristics of Lake Texana, Texas.

Characteristic	Description
Year constructed	1980
Controlling authority	Lavaca-Navidad River Authority
County	Jackson
Reservoir type	Mainstem
Shoreline Development Index	8.0
Conductivity	180-300 umhos/cm
Access: Boat	Good, 9 boat ramps
Bank	Adequate, 9 boat ramps, 1 fishing jetty, state park piers
Handicapped	Adequate, state park and LNRA park

Table 2. Harvest regulations for Lake Texana, Texas.

Species	Bag Limit	Minimum-Maximum Length (inches)
Catfish: channel and blue catfish, their hybrids and subspecies	25 (in any combination)	12 – No Limit
Catfish, flathead	5	18 – No Limit
Bass, white	25	10 – No Limit
Bass, palmetto	5	18 – No Limit
Bass, largemouth	5	14 – No Limit
Crappie: white and black crappie, their hybrids and subspecies	25 (in any combination)	10 – No Limit

Table 3. Stocking history of Lake Texana, Texas. Size catergories are: FGL = 1-3 inches and ADL = adults.

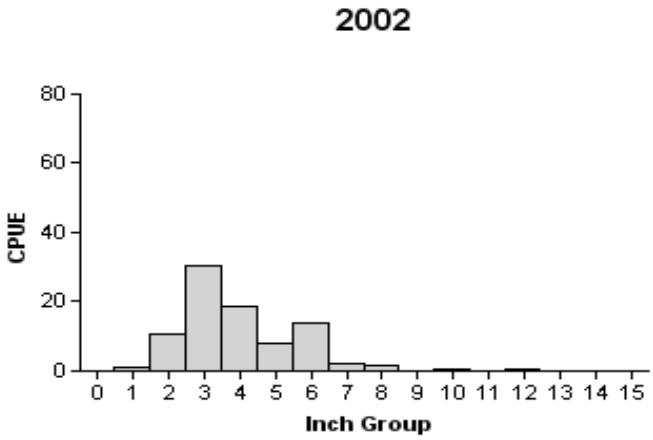
Year	Number	Size
	Threadfin shad	
1980	7,900	ADL
	Rainbow trout	
1993	2,009	ADL
	Blue catfish	
1994	300	ADL
	Channel catfish	
1980	285,646	FGL
1994	500	ADL
Species total	286,146	
	Striped bass	
1981	1,981,000	FGL
1982	1,365,507	FGL
1983	375,000	FGL
1984	1,189,600	FGL
1987	60,500	FGL
1988	700,000	FGL
1989	618,237	FGL
Species total	6,289,394	
	Palmetto bass	
1996	82,500	FGL
1997	165,081	FGL
1998	165,500	FGL
1999	82,789	FGL
Species total	495,870	
	Florida largemouth bass	
1979	5,000	FGL
1980	102,629	FGL
1981	553,678	FGL
1994	245,783	FGL
2006	488,326	FGL
2007	486,494	FGL
Species total	1,881,910	
	Triploid grass carp	
1989	15,294	ADL
1990	96	ADL
1991	26	ADL
Species total	15,416	

Table 4. Survey of littoral zone and physical habitat types, Lake Texana, Texas. A linear shoreline distance (miles) was recorded for each habitat type found during the 2006 habitat survey. Surface area (acres) and percent of reservoir surface area was determined for each type of aquatic vegetation found during the 2010 vegetation survey. Surface area estimates for vegetation are based on the acreage of water containing a specific vegetation type.

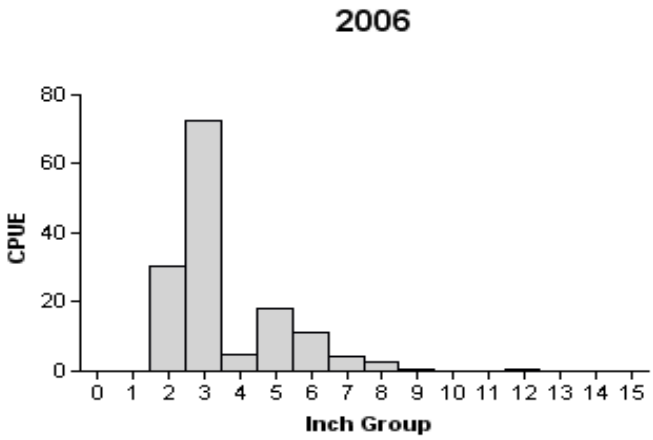
Habitat type	Shoreline Distance		Surface Area of Water with Vegetation	
	Miles	Percent of total	Acres	Percent of reservoir surface area
Shoreline habitat				
Boulder	<0.1	<0.1		
Bulkhead	0.6	0.4		
Concrete	2.8	1.8		
Natural	148.1	95.0		
Rip rap	2.5	1.6		
Rocky/gravel shoreline	1.9	1.2		
Total	155.9	100		
Vegetation				
American lotus			352.2	3.6
Native submerged vegetation[a]			203.3	2.1
Alligator weed			394.1	4.1
Giant salvinia			160.9	1.7
Hydrilla			607.3	6.2
Water hyacinth			1169.0	12.0
Adjacent to shoreline				
Boat dock	0.3	0.2		
Standing timber			795.0	8.2

[a] American pondweed, coontail, and water stargrass

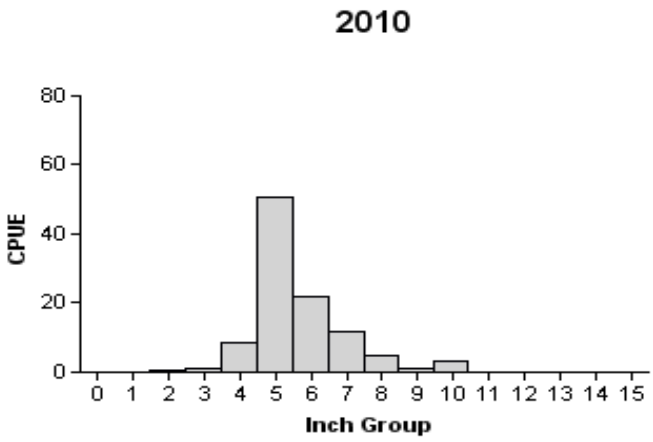
Gizzard Shad



Effort = 2.0
Total CPUE = 87.0 (26; 174)
IOV = 97 (3)



Effort = 2.0
Total CPUE = 145.0 (36; 290)
IOV = 98 (1)



Effort = 1.5
Total CPUE = 104.7 (26; 157)
IOV = 91 (3)

Figure 2. Number of gizzard shad caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Lake Texana, Texas, 2002, 2006, and 2010.

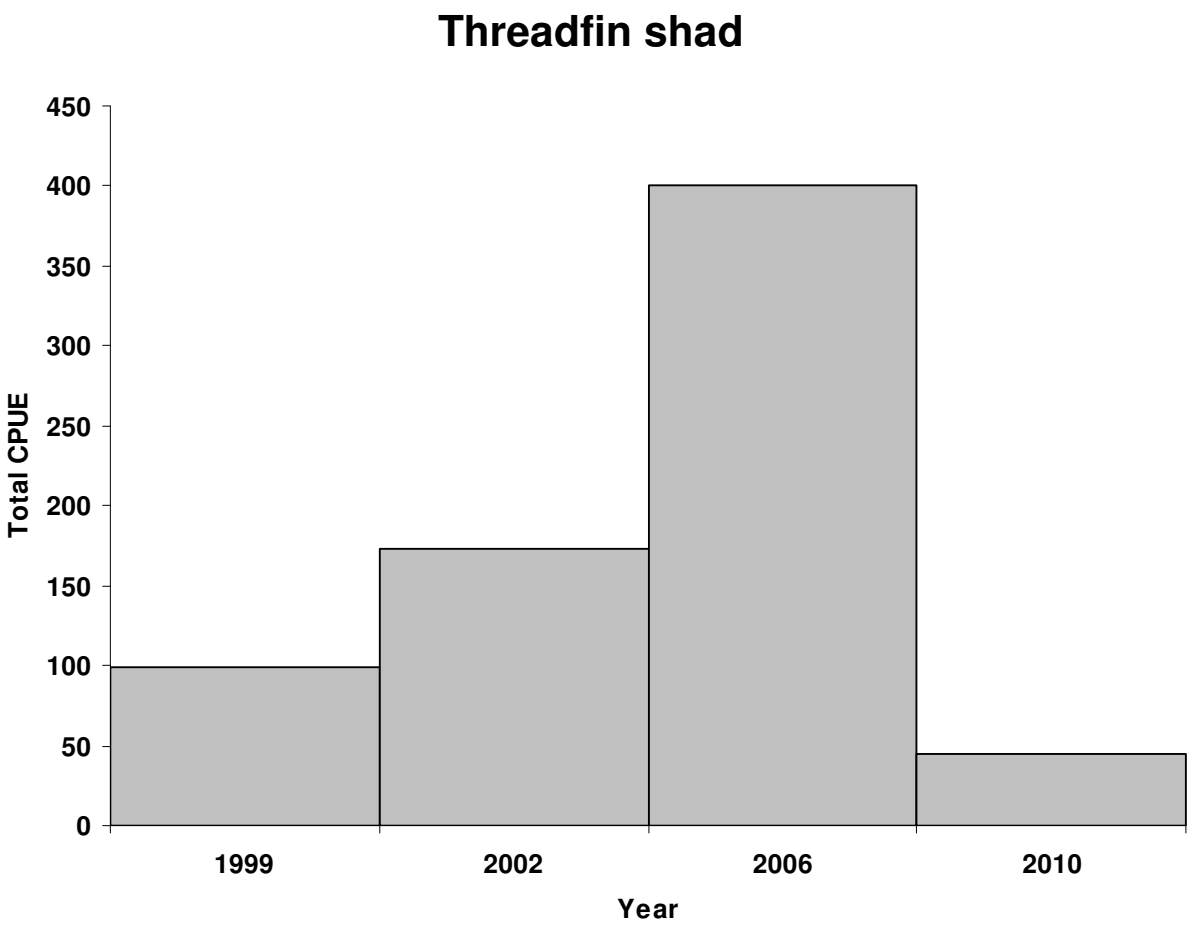


Figure 3. Total catch per unit effort for threadfin shad for fall electrofishing surveys, Lake Texana, Texas, 1999, 2002, 2006, and 2010. Sampling effort was 24 5-minute stations for 1999, 2002, and 2006 and 18 5-minute stations for 2010.

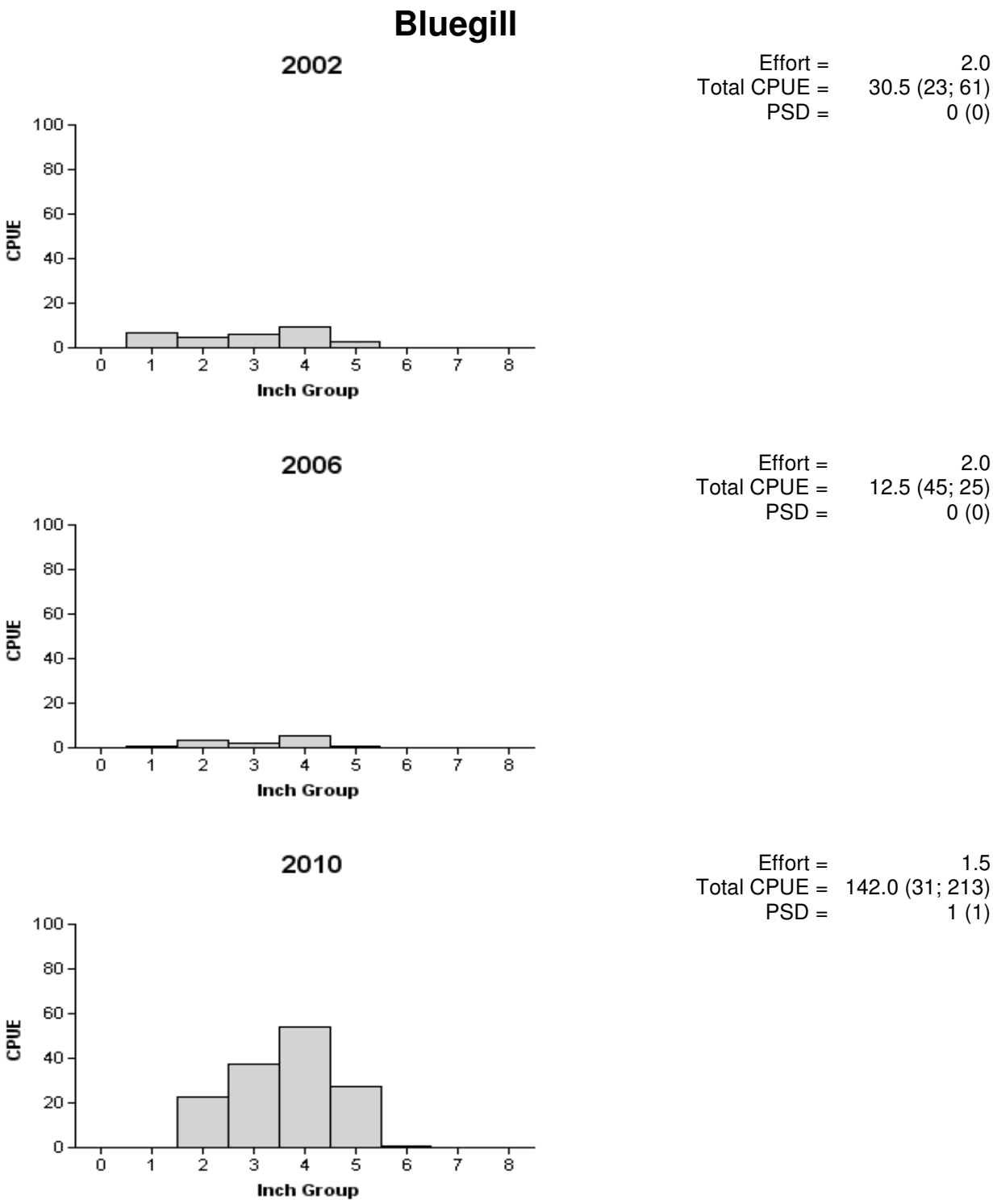
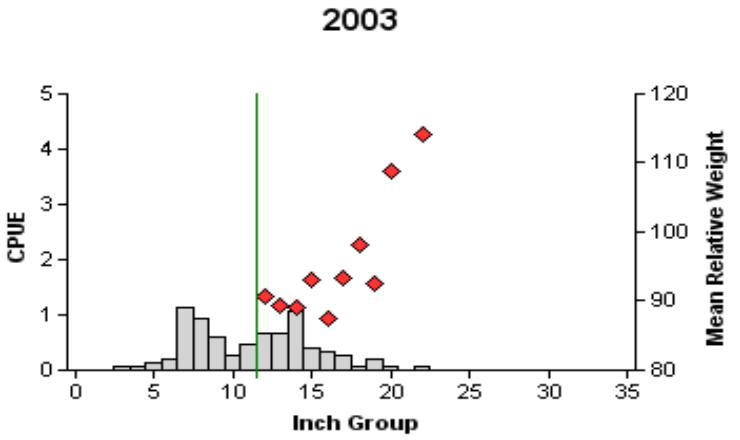
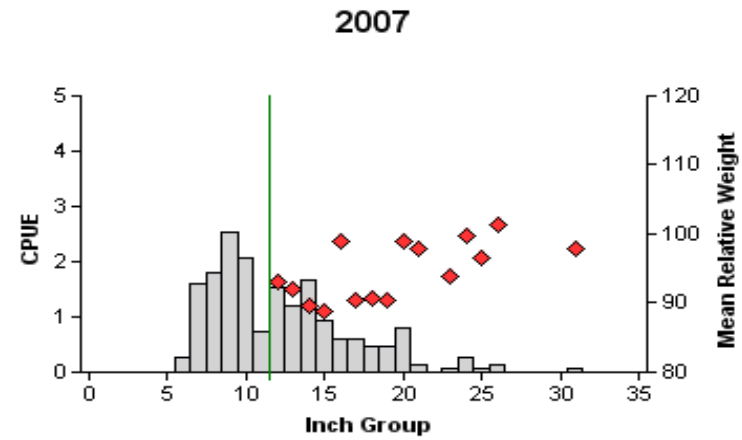


Figure 4. Number of bluegill caught per hour (CPUE, bars) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Texana, Texas, 2002, 2006, and 2010.

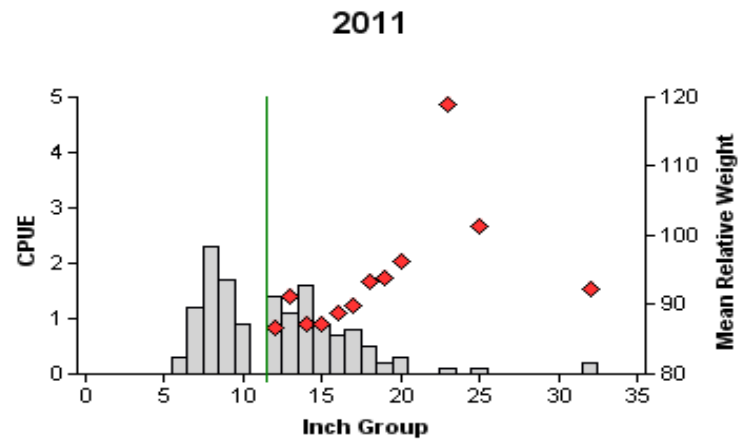
Blue Catfish



Effort =	15
Total CPUE =	7.7 (37; 115)
CPUE-12 =	3.8 (29; 57)
PSD =	4 (3)



Effort =	15
Total CPUE =	18.0 (30; 270)
CPUE-12 =	9.0 (29; 135)
PSD =	17 (2)

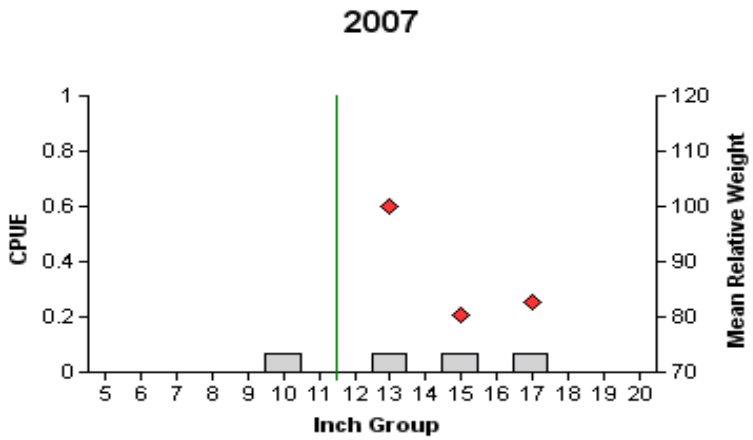


Effort =	10
Total CPUE =	14.3 (26; 143)
CPUE-12 =	7.9 (20; 79)
PSD =	9 (5)

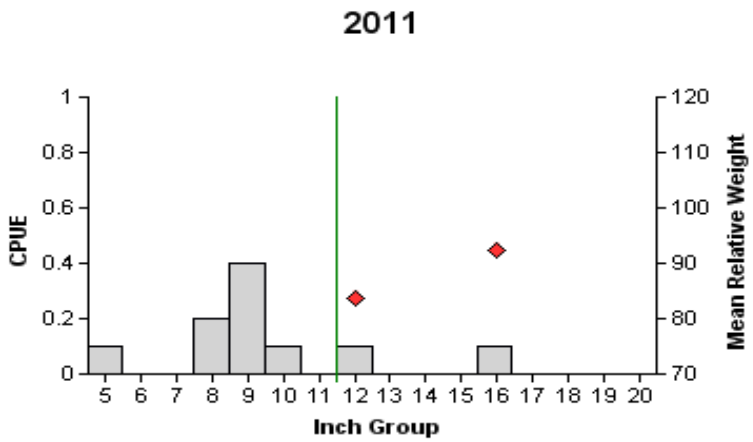
Figure 5. Number of blue catfish caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Lake Texana, Texas, 2003, 2007, and 2011. Vertical line denotes 12-inch minimum length limit.

Channel Catfish

Effort =	15
Total CPUE =	0.2 (72; 3)
CPUE-12 =	0.2 (72; 3)
PSD =	33 (16)



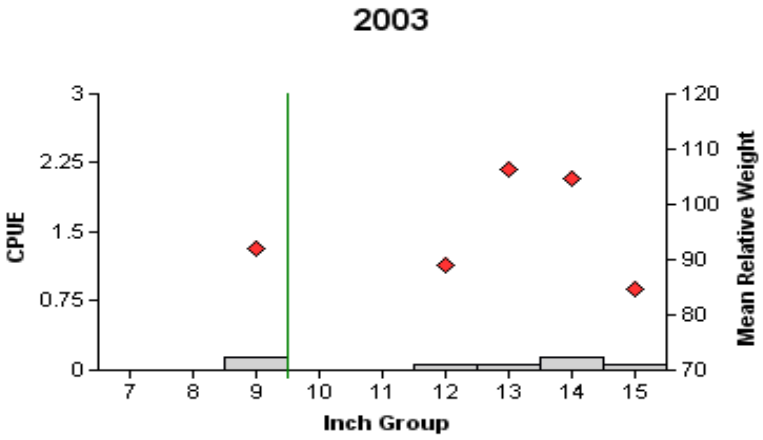
Effort =	15
Total CPUE =	0.3 (57; 4)
CPUE-12 =	0.2 (72; 3)
PSD =	33 (33)



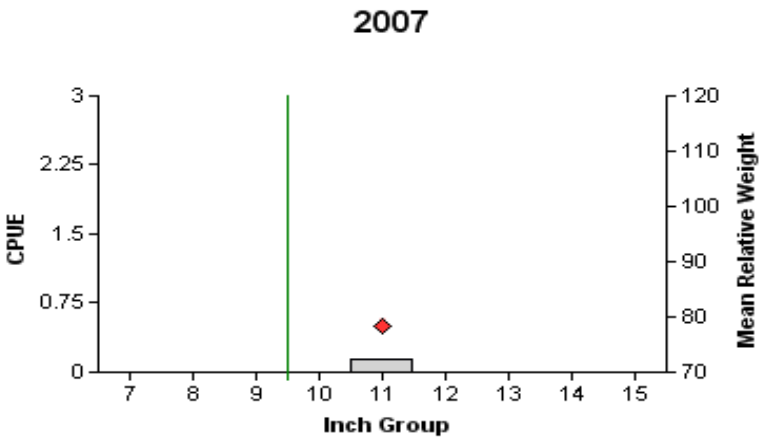
Effort =	10
Total CPUE =	1.0 (45; 10)
CPUE-12 =	0.2 (67; 2)
PSD =	50 (37)

Figure 6. Number of channel catfish caught per net night (CPUE, bars), mean relative weight (diamonds) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Lake Texana, Texas, 2003, 2007, and 2011. Vertical line denotes 12-inch minimum length limit.

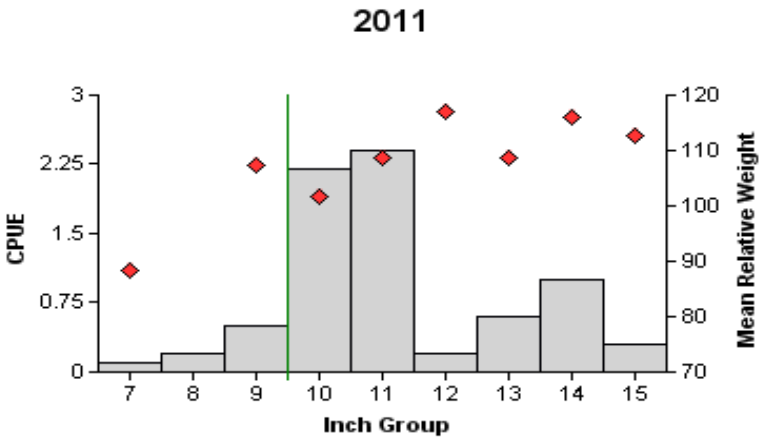
White Bass



Effort = 15
Total CPUE = 0.5 (62; 7)
CPUE-10 = 0.3 (63; 5)



Effort = 15
Total CPUE = 0.1 (68; 2)
CPUE-10 = 0.1 (68; 2)



Effort = 10
Total CPUE = 7.5 (33; 75)
CPUE-10 = 6.7 (37; 67)

Figure 7. Number of white bass caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill netting surveys, Lake Texana, Texas, 2003, 2007, and 2011. Vertical line denotes 10-inch minimum length limit.

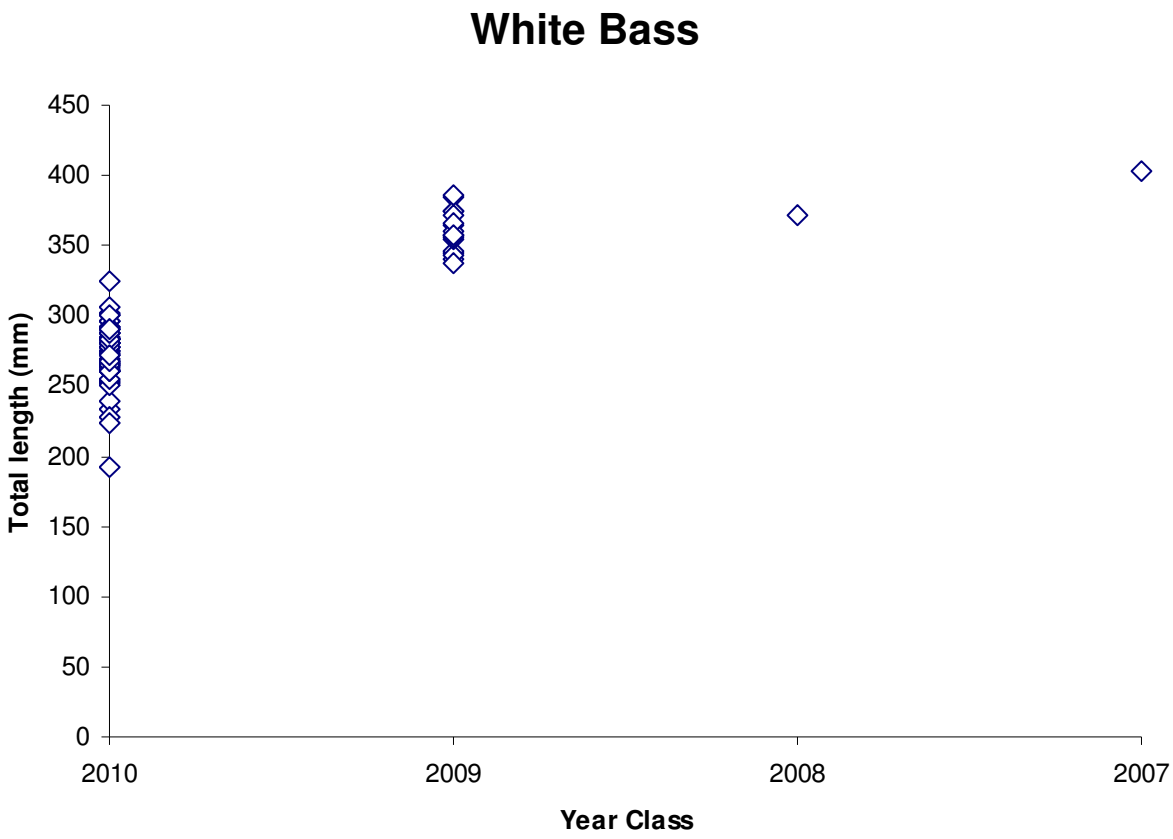


Figure 8. Length at age for white bass collected from gill nets at Lake Texana, Texas, February 2011 (N=75).

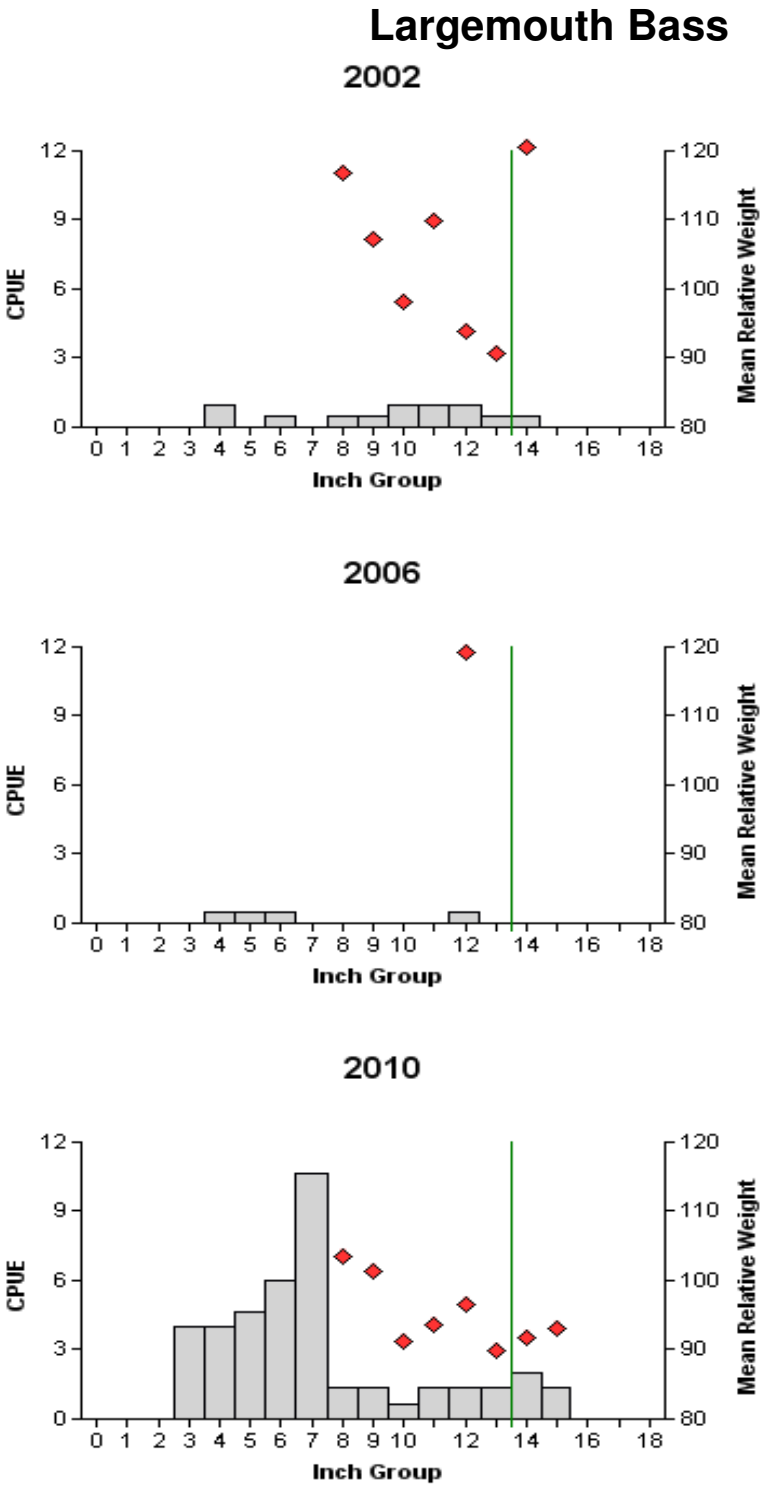


Figure 9. Number of largemouth bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Lake Texana, Texas, 2002, 2006, and 2010. Vertical line denotes 14-inch minimum length limit.

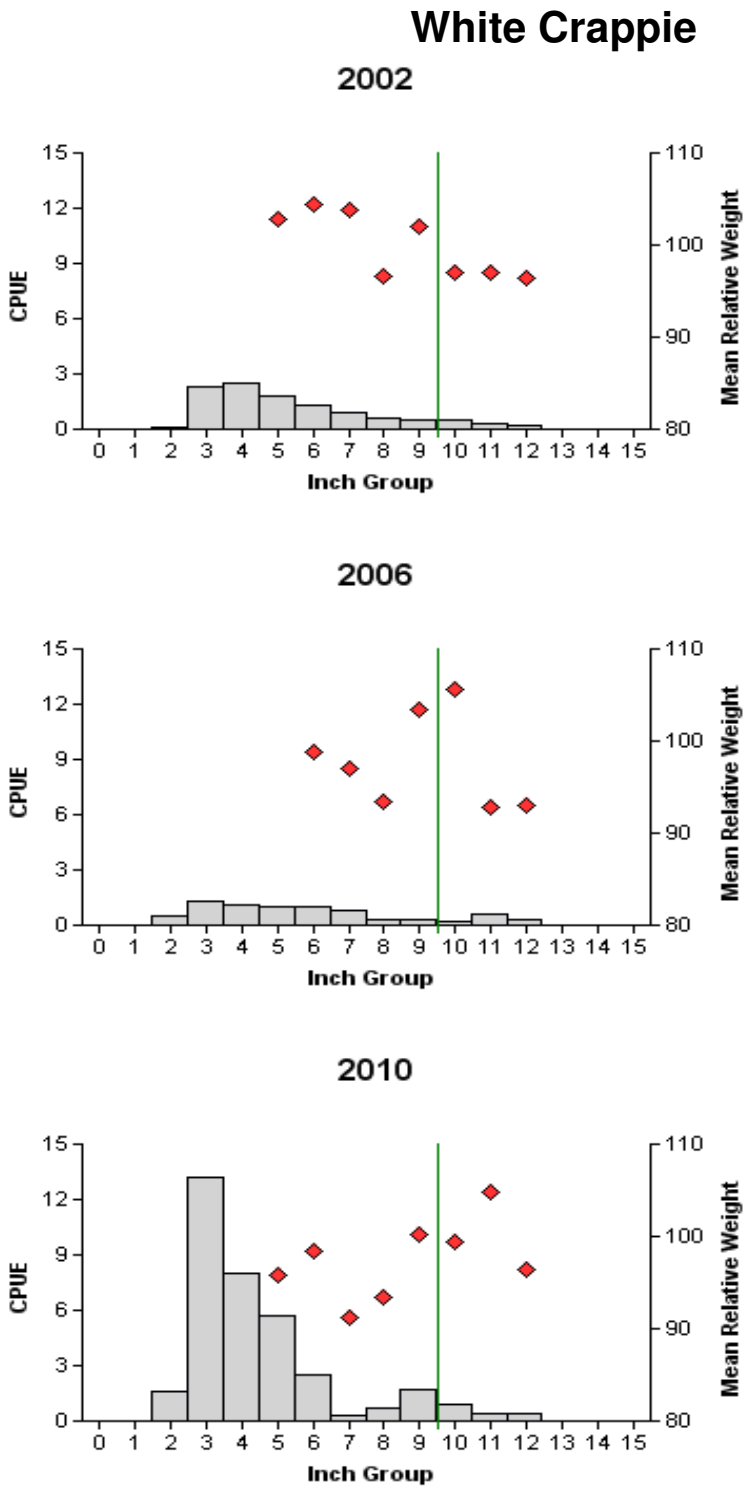


Figure 10. Number of white crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Lake Texana, Texas, 2002, 2006, and 2010. Vertical line denotes 10-inch minimum length limit.

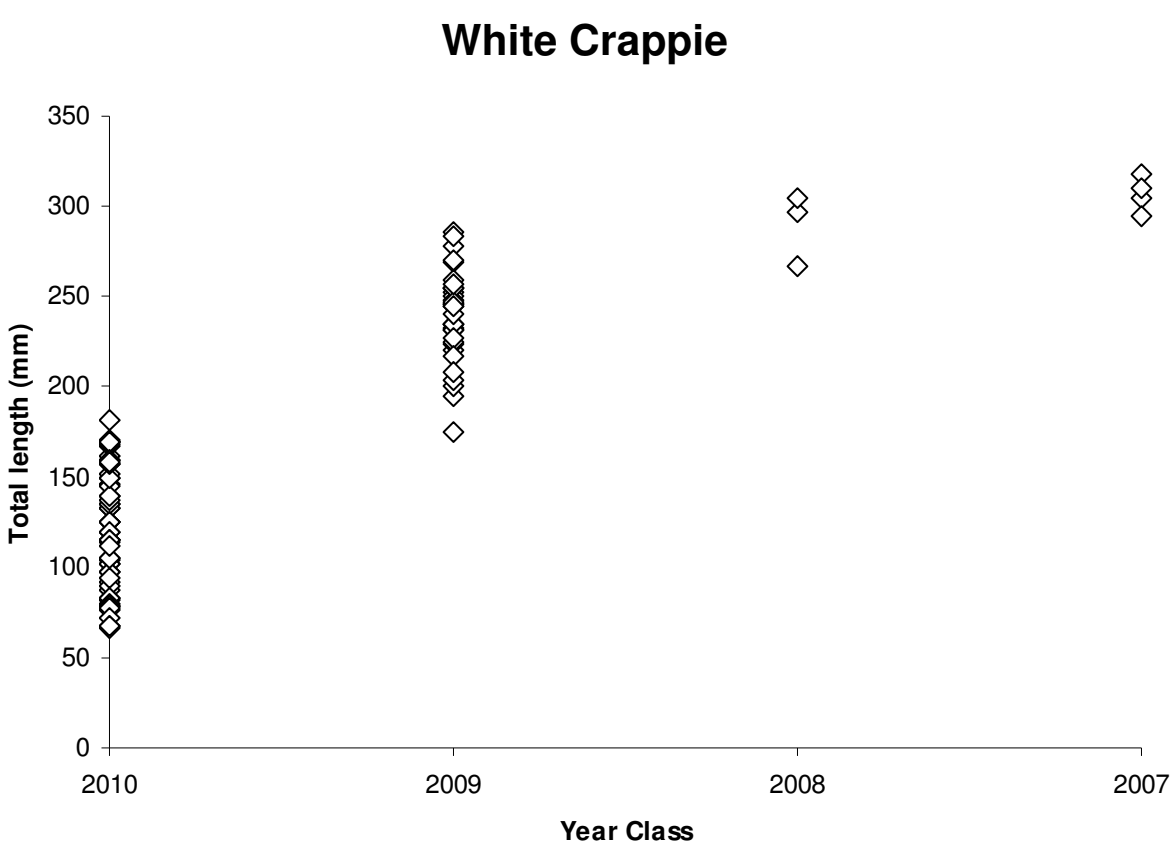
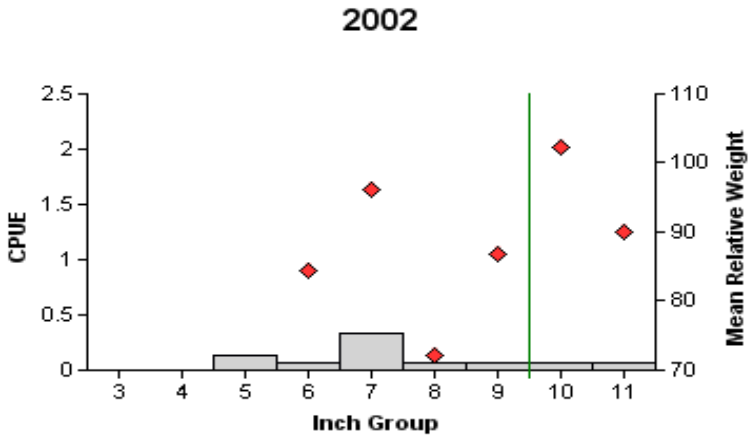
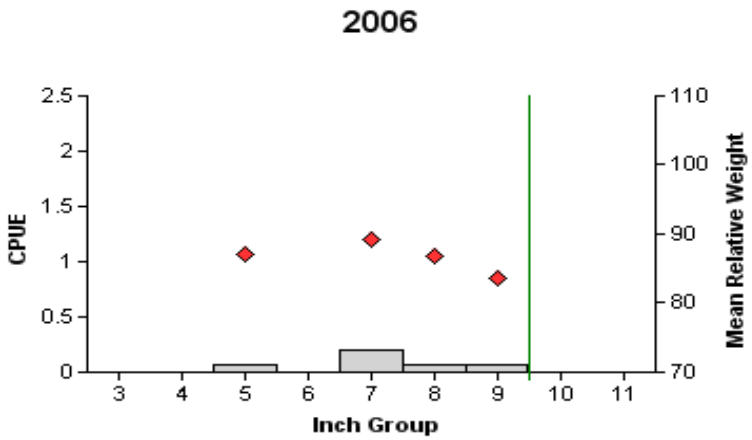


Figure 11. Length at age for white crappie collected from trap nets at Lake Texana, Texas, November 2010 (N=100).

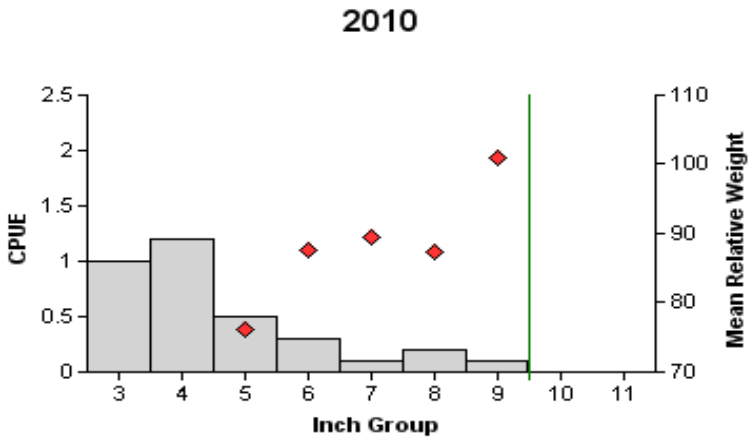
Black Crappie



Effort =	15
Total CPUE =	0.8 (53; 12)
CPUE-10 =	0.1 (100; 2)
PSD =	33 (14)



Effort =	15
Total CPUE =	0.4 (53; 6)
CPUE-10 =	0.0 (0; 0)
PSD =	33 (14)



Effort =	10
Total CPUE =	3.4 (38; 34)
CPUE-10 =	0.0 (0; 0)
PSD =	25 (10.8)

Figure 12. Number of black crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Lake Texana, Texas, 2002, 2006 and 2010. Vertical line denotes 10-inch minimum length limit.

Table 5. Proposed sampling schedule for Lake Texana, Texas. Electrofishing and trap net surveys are conducted in the fall and the gill net survey in the spring. Standard surveys are denoted by S.

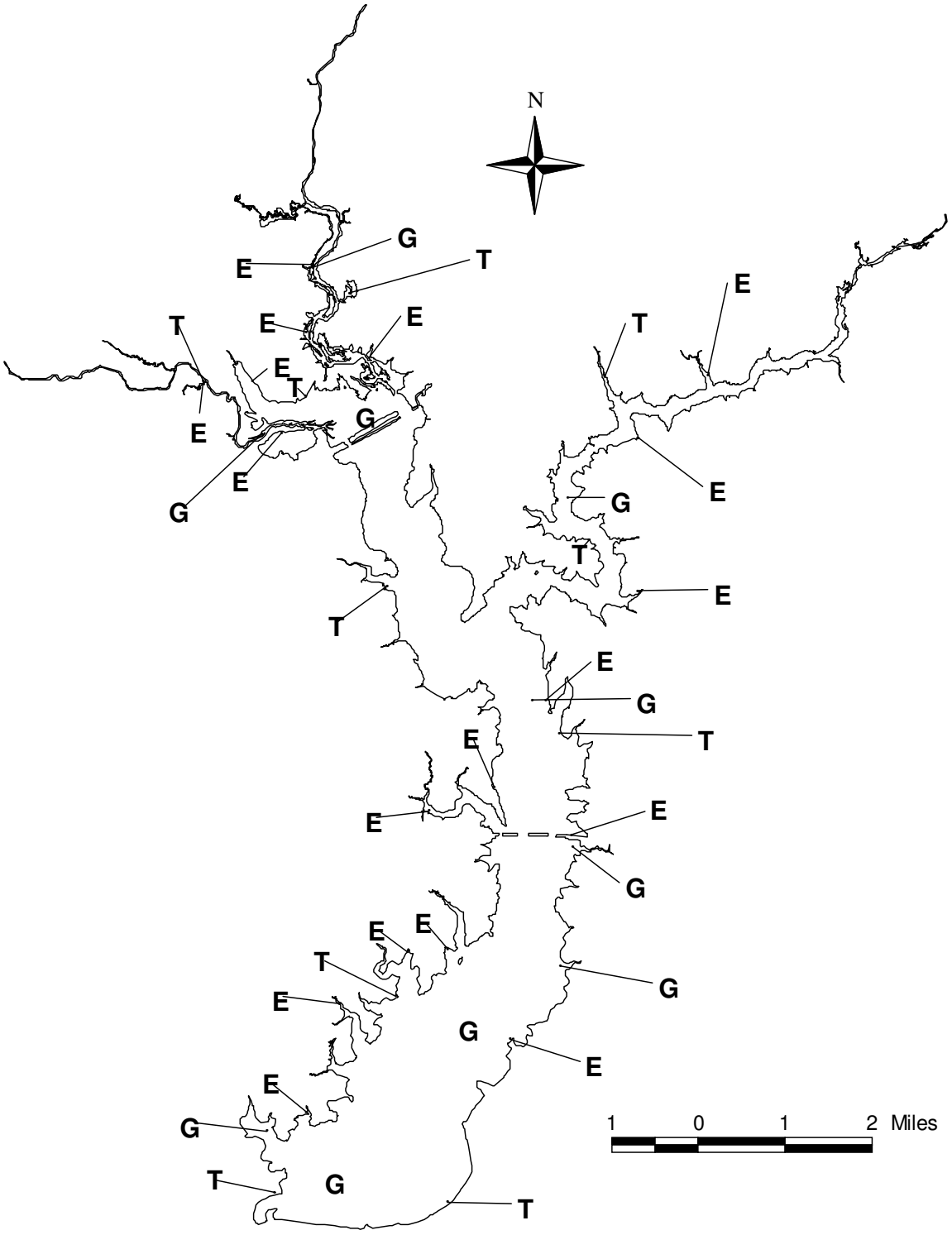
Survey Year	Electrofisher	Trap Net	Gill Net	Creel Survey	Vegetation Survey	Access Survey	Report
Fall 2011-Spring 2012							
Fall 2012-Spring 2013							
Fall 2013-Spring 2014							
Fall 2014-Spring 2015	S	S	S		S	S	S

APPENDIX A

Number (N) and catch rate (CPUE) of all species collected from all gear types from Lake Texana, Texas, 2010-2011.

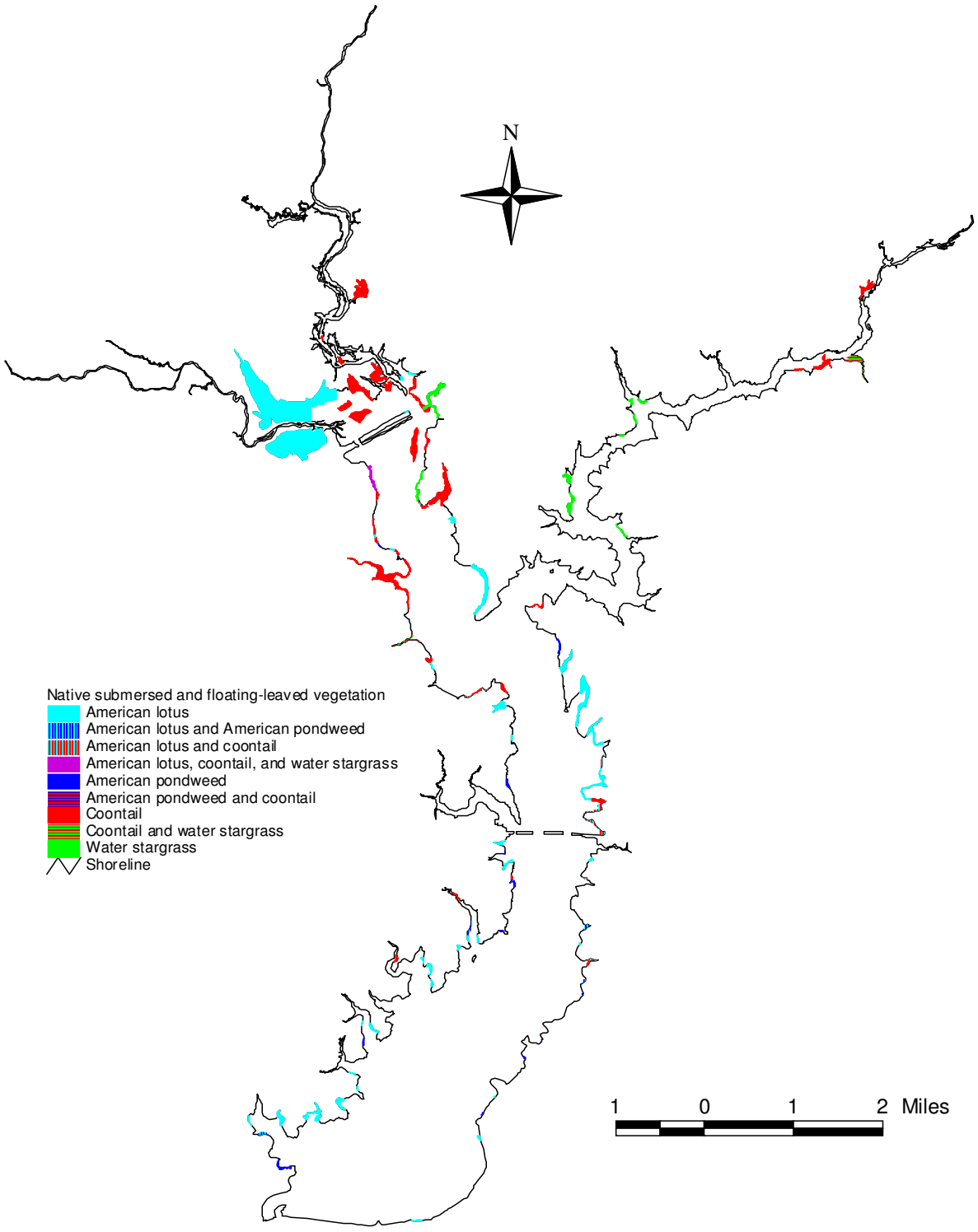
Species	Electrofishing		Trap Netting		Gill netting	
	N	CPUE	N	CPUE	N	CPUE
Spotted gar					7	0.7
Longnose gar					10	1.0
Alligator gar					2	0.2
Gizzard shad	157	104.7	2	0.2	113	11.3
Threadfin shad	67	44.7	3	0.3		
Common carp					11	1.1
Bullhead minnow	6	4.0				
Inland silverside	5	3.3				
Smallmouth buffalo	1	0.7	1	0.1	36	3.6
Blue catfish	6	4.0	3	0.3	143	14.3
Channel catfish	13	8.7	4	0.4	10	1.0
Flathead catfish					1	0.1
White bass	11	7.3			75	7.5
Warmouth	9	6.0	2	0.2		
Bluegill	213	142.0	112	11.2	4	0.4
Longear sunfish	149	99.3	77	7.7		
Redear sunfish	42	28.0	1	0.1		
Largemouth bass	60	40.0			3	0.3
White crappie	51	34.0	354	35.4	49	4.9
Black crappie			34	3.4	10	1.0
Logperch			1	0.1		
Freshwater drum	7	4.7	2	0.2	10	1.0

APPENDIX B



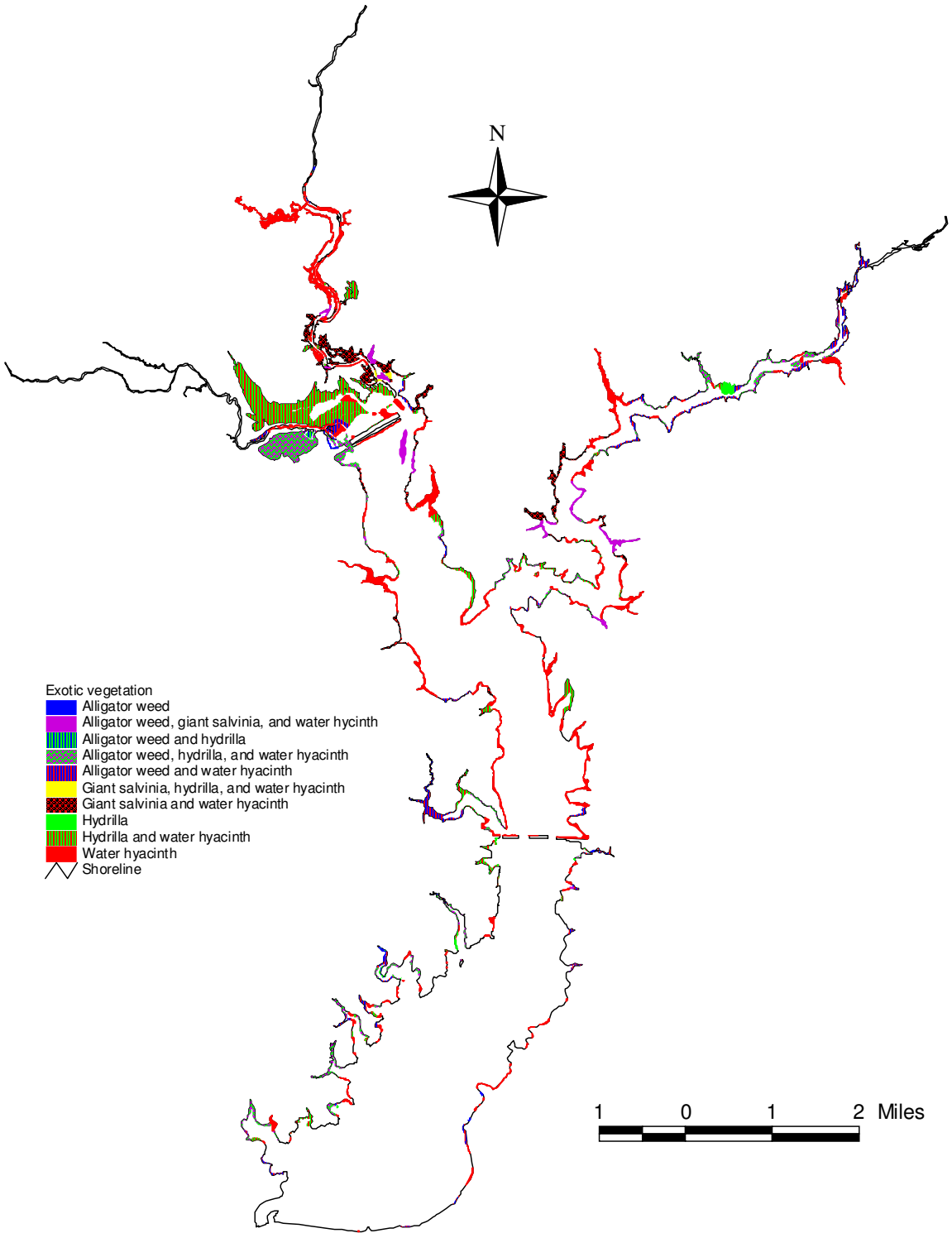
Location of sampling sites, Lake Texana, Texas, 2010-2011. Trap net, gill net, and electrofishing stations are indicated by T, G, and E, respectively.

APPENDIX C



Native submerged and floating-leaved vegetation map for Lake Texana, Texas, 2010.

APPENDIX D



Exotic aquatic vegetation map for Lake Texana, Texas, 2010.